

Radical Functions & Rational Exponents Tournament Review

This Algebra 2 Tournament Review is a fun-filled group tournament for ***Radical Functions & Rational Exponents Unit.***

The tournament review activity is a game composed of content relevant questions designed to test the knowledge students gain from class presentations and homework.

Games are played at tables of four students. Most games are simply numbered questions on a handout. A student picks a number card and attempts to answer the question corresponding to the number. A challenge rule permits players to challenge each other's answers.

Standards covered:

CCSS: : HSF.RN.A.1; HSF.RN.A.2; HSF.CN.A.1; HSF.REI.A.2; HSF.IF.A.1; HSF.IF.A.2; HSF.IF.C.7; HSF.IF.C.7B; HSF.BF.A.1B; HSF.BF.A.1C; HSF.BF.B.4; HSF.BF.B.4A; HSF.BF.B.4B; HSF.BF.B.4C; HSF.BF.B.4D

TEKS: A2.1(A); A2.1(D); A2.1(E); A2.1(F); A2.1(G); A2.2(A); A2.2(B); **:** A2.2(C); A2.2(D); A2.4(F);A2.7(G); A2.7(H)

Teaching Suggestions:

- Use the activity as a whole class tournament
- Use the cards as a small group activity
- Use the set of questions as a review prior to assessing students

Unit 6 Review Questions

RADICAL FUNCTIONS & RATIONAL EXPONENTS TOURNAMENT REVIEW

Simplify each radical expression. Use absolute value symbols when needed:

1. $\sqrt[3]{8m^6}$
2. $\sqrt[3]{125x^9}$
3. $\sqrt[5]{243x^5y^{15}}$
4. $\sqrt[4]{256x^4y^8}$

Multiply and simplify. Assume that all expressions represent nonnegative numbers:

5. $\sqrt{9x^2} \cdot \sqrt{9y^5}$
6. $\sqrt[3]{6x} \cdot \sqrt[3]{12x^4}$
7. $\sqrt{5m^3} \cdot \sqrt{10n^4}$
8. $\sqrt[3]{50x^3z^5} \cdot \sqrt[3]{15y^3z}$

Divide and simplify. Assume that all expressions represent nonnegative numbers:

9. $\frac{\sqrt{40xy^3}}{\sqrt{8x}}$
10. $\frac{\sqrt{75mn^3}}{\sqrt{3n}}$
11. $\sqrt[3]{\frac{8x^5}{27y^3}}$

Rationalize the denominator. Assume that all expressions represent nonnegative numbers:

12. $\sqrt{\frac{9}{2}}$
13. $\frac{\sqrt[3]{7x}}{\sqrt[3]{3y}}$
14. $\frac{\sqrt[4]{2x}}{\sqrt[4]{3x^2}}$

Perform the indicated operation. Simplify by collecting like radical terms, if possible., assuming all expressions under radical signs represent nonnegative numbers:

15. $9\sqrt{45} + 7\sqrt{20}$
16. $8\sqrt{27} - 4\sqrt{3}$
17. $3\sqrt[3]{16} + \sqrt[3]{54}$
18. $14\sqrt[3]{xy} - 3\sqrt[3]{8xy}$
19. $\sqrt{6}(2 - 4\sqrt{6})$
20. $\sqrt{3}(2\sqrt{5} - 3\sqrt{12})$
21. $\sqrt{3}(5 + 2\sqrt{9})$
22. $\sqrt[3]{2}(\sqrt[3]{4} - 2\sqrt[3]{32})$
23. $(\sqrt{6} + 3\sqrt{2})(\sqrt{2} - \sqrt{3})$
24. $(\sqrt{2} + 5)^2$

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Multiply each pair of conjugates:

25. $(3\sqrt{2} - 9)(3\sqrt{2} + 9)$
26. $(5 + \sqrt{2})(5 - \sqrt{2})$
27. $(\sqrt{x} + \sqrt{y})(\sqrt{x} - \sqrt{y})$
28. $(\sqrt{18} + 2\sqrt{7})(\sqrt{18} - 2\sqrt{7})$

Rationalize and simplify:

29. $\frac{2}{\sqrt{3} - 4}$
30. $\frac{2 + \sqrt{5}}{1 - \sqrt{5}}$

Simplify each expression by using the properties of rational exponents:

31. $(-27)^{\frac{2}{3}}$
32. $\left(3x^{\frac{1}{2}}\right)\left(4x^{\frac{2}{3}}\right)$
33. $\frac{12m^{\frac{1}{3}}}{4m^{\frac{1}{2}}}$
34. $81^{\frac{1}{2}}$
35. $\left(w^{\frac{2}{3}}\right)^{-3}$
36. $\frac{5^{\frac{5}{2}}}{5^{\frac{3}{2}}}$

Solve. Check for extraneous solutions.

37. $\sqrt{2x + 1} = 13$
38. $\sqrt[3]{6x + 9} + 8 = 5$
39. $\sqrt{3y + 1} = \sqrt{2y + 6}$
40. $2\sqrt{1 - x} = \sqrt{5}$

Let $f(x) = x^2 + 3x + 2$ and $g(x) = x + 2$. Find the following:

41. $f(x) + g(x)$
42. $f(x) - g(x)$
43. $f(x) \cdot g(x)$
44. $\frac{f(x)}{g(x)}$; state the domain restrictions
45. $f(g(x))$
46. $f(g(2))$

Find the inverse of the function. And sketch both the function and its inverse.

47. $f(x) = x^2 - 3$
48. $g(x) = x^3 + 2$
49. $h(x) = 2x - 3$
50. $f(x) = \sqrt{x} + 5$

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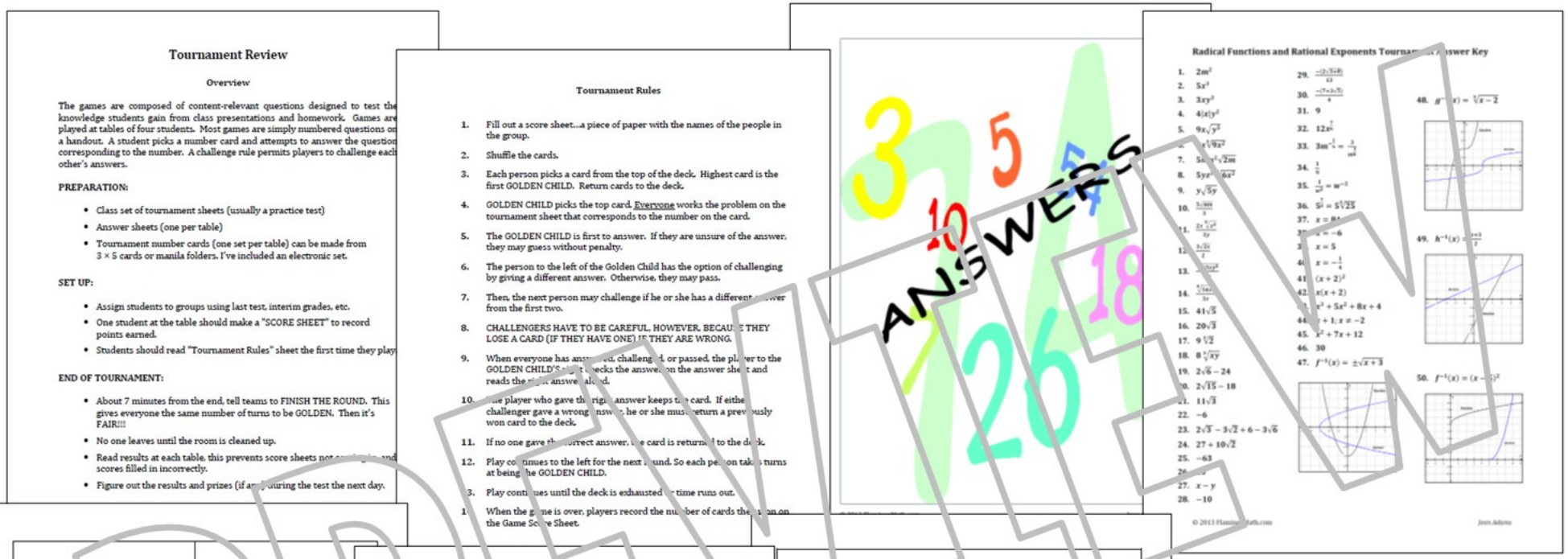
PREVIEW

Tournament Review



Tournament Review

Overview

The games are composed of content-relevant questions designed to test the knowledge students gain from class presentations and homework. Games are played at tables of four students. Most games are simply numbered questions on a handout. A student picks a number card and attempts to answer the question corresponding to the number. A challenge rule permits players to challenge each other's answers.

PREPARATION:

- Class set of tournament sheets (usually a practice test)
- Answer sheets (one per table)
- Tournament number cards (one set per table) can be made from 3 × 5 cards or manila folders. I've included an electronic set.

SET UP:

- Assign students to groups using last test, interim grades, etc.
- One student at the table should make a "SCORE SHEET" to record points earned.
- Students should read "Tournament Rules" sheet the first time they play

END OF TOURNAMENT:

- About 7 minutes from the end, tell teams to FINISH THE ROUND. This gives everyone the same number of turns to be GOLDEN. Then it's FAIR!!!
- No one leaves until the room is cleaned up.
- Read results at each table, this prevents score sheets not
- scores filled in incorrectly.
- Figure out the results and prizes (if a

Tournament Rules

1. Fill out a score sheet...a piece of paper with the names of the people in the group.
2. Shuffle the cards.
3. Each person picks a card from the top of the deck. Highest card is the first GOLDEN CHILD. Return cards to the deck.
4. GOLDEN CHILD picks the top card. Everyone works the problem on the tournament sheet that corresponds to the number on the card.
5. The GOLDEN CHILD is first to answer. If they are unsure of the answer, they may guess without penalty.
6. The person to the left of the Golden Child has the option of challenging by giving a different answer. Otherwise, they may pass.
7. Then, the next person may challenge if he or she has a different
8. CHALLENGERS HAVE TO BE CAREFUL, HOWEVER, BECAU E THEY LOSE A CARD (IF THEY HAVE ONE) IF THEY ARE WRONG.
9. When everyone has ans d, challeng d, or passed, the pl er to the GOLDEN CHILD'S l ecks the answe on the answer she t and reads the r answe d.
10. e player who gave th rig answer keeps t card. If eithe challenger gave a wrong nsw r, he or she mus return a prev usly won card to the deck.
11. If no one gave th rrect answer, e card is return d to the de k.
12. Play co tinues to the left for the next und. So each pe on tak s turns at being he GOLDEN CHILD.
3. Play conti ues until the deck is exhausted r time runs out.
1. When the g e is over, players record the nu ber of cards the on on the Game Sc e Sheet.

Radical Functions and Rational Exponents Tourna nswer Key

1. $2m^2$
2. $5x^3$
3. $3xy^3$
4. $4|x|y^2$
5. $9x\sqrt{y^3}$
7. $5a^2\sqrt{2m}$
8. $5yz\sqrt{6x^2}$
9. $y\sqrt{5y}$
10. $\frac{5\sqrt{66}}{3}$
11. $\frac{2x\sqrt{x^2}}{5y}$
12. $\frac{5\sqrt{21}}{7}$
13. $\frac{\sqrt{5}x^2}{}$
14. $\frac{\sqrt{5}4x}{3x}$
15. $41\sqrt{5}$
16. $20\sqrt{3}$
17. $9\sqrt[3]{2}$
18. $8\sqrt[3]{xy}$
19. $2\sqrt{6}-24$
20. $2\sqrt{15}-18$
21. $11\sqrt{3}$
22. -6
23. $2\sqrt{3}-3\sqrt{2}+6-3\sqrt{6}$
24. $27+10\sqrt{2}$
25. -63
27. $x-y$
28. -10
29. $\frac{-(2\sqrt{3}+8)}{11}$
30. $\frac{-(7+3\sqrt{5})}{4}$
31. 9
32. $12x^{\frac{7}{6}}$
33. $3m^{-\frac{1}{4}}=\frac{3}{\sqrt[4]{m}}$
34. $\frac{1}{6}$
35. $\frac{1}{w^2}=w^{-2}$
36. $5^{\frac{2}{3}}=5\sqrt[3]{25}$
37. $x=8$
38. $x=-6$
39. $x=5$
40. $x=-\frac{1}{8}$
41. $(x+2)^2$
42. $x(x+2)$
43. x^3+5x^2+8x+4
44. $x+1; x\neq -2$
45. $x^2+7x+12$
46. 30
47. $f^{-1}(x)=\pm\sqrt{x+3}$
48. $g^{-1}(x)=\sqrt[3]{x-2}$
49. $h^{-1}(x)=\frac{x+2}{2}$
50. $f^{-1}(x)=(x-5)^2$

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PREVIEW



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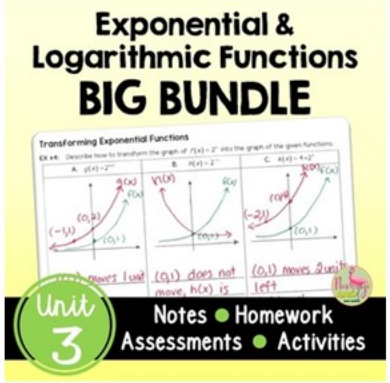

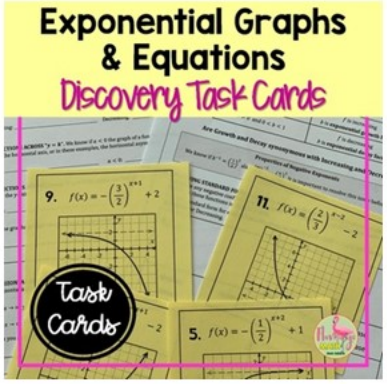



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